

KELLEY DRYE & WARREN LLP

A LIMITED LIABILITY PARTNERSHIP

1200 19TH STREET, N.W.

SUITE 500

WASHINGTON, D.C. 20036

(202) 955-9600

FACSIMILE

(202) 955-9792

www.kelleydrye.com

DIRECT LINE: (202) 955-9890

EMAIL: sjoyce@kelleydrye.com

NEW YORK, NY

TYSONS CORNER, VA

LOS ANGELES, CA

CHICAGO, IL

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BRUSSELS, BELGIUM

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January 9, 2003

VIA ELECTRONIC FILING

Marlene H. Dortch

Secretary

Federal Communications Commission

445 12th Street, S.W.

Washington, D.C. 20554

Re: Comments, *Spectrum Policy Taskforce Request for Comment*,
ET Docket No. 02-135

Dear Ms. Dortch:

Attached hereto are the Comments of Loea Communications Corporation in the above-captioned docket. Please do not hesitate to contact me with any questions or concerns regarding this filing: 202.955.9890.

Sincerely,



Stephanie A. Joyce

Counsel for Loea Communications Corporation

Attachment

In the Matter of)
) ET Docket No. 02-135
Spectrum Policy Task Force Report)

Loea Communications Corporation (“Loea”), by its attorneys, hereby comments upon the Report issued by the Spectrum Policy Task Force (“Task Force”) on November 15, 2002 in the above-captioned docket (“Report”).¹ Loea focuses these comments on the spectrum licensing models proposed by the Task Force as they would apply to the spectrum bands at 71.0-76.0 and 81.0-86.0 Gigahertz (“GHz”), known collectively as the Upper Millimeter Wave (“UMW”) spectrum. In support of these comments, the following is respectfully shown:

Loea is a subsidiary of Trex Enterprises Corporation (“Trex”) that is devoted to developing and deploying innovative communications wireless technologies. Loea has developed a high-speed, high-resolution data transmission solution capable of bringing full duplex 1.25 Gigabits-per-second (“Gbps”) throughput over a highly directional, 30 milliwatt (“mW”) beam, which Loea calls a “pencil beam” because it is only 0.36 degrees wide. Loea has successfully tested its pencil beam technology in several venues.

¹ The Commission formally sought comment in Public Notice FCC 02-322, *Commission Seeks Public Comment on Spectrum Policy Task Force Report* (rel. Nov. 25, 2002).

successful and demonstrate what Loea first postulated to the Commission in its Petition for Rulemaking filed in September 2001.² Namely that the UMW spectrum can be employed with extremely narrow beams to provide reliable, carrier class broadband services with a minimum risk of harmful interference.³

Loea has also demonstrated the various potential applications of this UMW spectrum. Its experience with service tests reaffirm the validity of the licensing models proposed by Loea and other commenters to the NPRM on the UMW spectrum. Potential users of the UMW spectrum have expressed serious concerns about potential interference, no matter how remote the chance. Users are concerned that if they deploy UMW systems they will rely on the significant bandwidth provided by UMW and invest in expensive ancillary equipment to operate in the UMW spectrum. If this spectrum remains unlicensed, their ability to seek alternative means in a timely manner — should they experience interference — will be severely constrained if they deploy UMW as their primary means of communication.

B. Technical Characteristics of the UMW Spectrum

The UMW spectrum is unique because of its extremely narrow propagation beam. For example, at a distance of 1.7 miles, with 240 Watts EIRP, Loea's test transmissions have expanded to a radius of only 28 feet. Significantly, they need only a slight directional adjustment of approximately 0.6 degrees, and other dishes operating within that 28-foot radius were able to use the same frequency spectrum without interference.

² Loea Petition for Rulemaking, RM-10288 (filed September 10, 2001).

³ See also WT Docket No. 02-146, *Allocations and Service Rules for the 71-76 GHz, 81-86 GHz and 92-95 GHz Bands*, Loea Communications Corporation Petition for Rulemaking, Comments of Loea Communications Corporation (filed December 18, 2002). Loea herein refers to this docket as the "71 GHz Proceeding."

Loea has already achieved 1.25 Gbps of throughput capacity over its pencil beam technology. Loea is currently developing technology that will enable the equivalent of 2.488 Gbps communications, which it expects to complete this year and, taking advantage of the contiguous spectrum blocks for this spectrum, within two years it will meet the next “10-Gigabit Ethernet” standard to provide 10.7 Gbps throughput. Loea is also developing an ANSI SMPTE-292M standard for streaming uncompressed High Definition TV at 1.485 Gbps for the TV industry. In fact, Loea was recently granted Special Temporary Authority by the FCC to test streaming HDTV for ABC TV for this year’s Super Bowl in San Diego. The TV community is excited about the prospects of using UMW spectrum, because broadcasters now can use streaming HDTV without incurring the half-second delays associated with compression or encoding and decoding of HDTV streams (which is the current method of sending HDTV over wireless links).

II. LICENSING MODELS FOR THE UMW SPECTRUM

With these comments, Loea supplements its initial comments in this proceeding⁴ to focus on the Task Force’s recommendations with respect to spectrum licensing models. Having reviewed the Report’s synopses of the *exclusive use* and *commons* models, Loea urges the Bureau to consider the proposed models not as final and complete constructs into which rules for any spectrum band should be “pigeonholed.” Rather, each model is comprised of many individual characteristics that must be matched precisely with the nature, technical aspects and the physics of the spectrum, as well as its proposed use. Loea submits that an appropriate new licensing regime should permit the Bureau to choose from among a menu of individual license rules rather than the application of one or a few models. This approach will avoid the “one-size-

⁴ WT Docket No. 02-135, Initial Comments of Loea (filed July 8, 2002); Reply Comments of Loea (filed July 23, 2002).

fits-all” regulation that the Commission has found inefficient⁵ while ensuring that factors such as proposed use, need for formal authorizations, and the technical characteristics of the technology and spectrum are properly taken into account.

A. Spectrum Licenses Are Necessary For The UMW Spectrum

In order to bring the use of the UMW spectrum to the public, Loea believes strongly that some measure of formal licensing is required.⁶ For the UMW spectrum, licenses serve three crucial purposes. First, formal licenses provide assurance to both investors and consumers that newly allocated commercial spectrum has received the Commission’s imprimatur as a reliable medium, enabling entities to raise the capital necessary for development, deployment and marketing of services. Secondly, formal licenses help to ensure better service quality by providing authorization only to the entities that are qualified to deploy and install equipment in a workmanlike manner to avoid interference.⁷ Third, granting formal licenses establishes a stable construct for spectrum users to perform the minimal, but necessary, path coordination that will prevent and resolve interference.⁸ The ultimate result of each of these characteristics is to provide the most reliable and innovative service to the consumer. The sheer amount of traffic

⁵ Recently Chairman Powell noted that “[t]here is no one-size-fits-all model for spectrum policy.” See Remarks of Chairman Michael K. Powell at the Silicon Flatirons Telecommunications Program, University of Colorado at Boulder, “Broadband Migration III: New Directions in Wireless Policy” (Oct. 30, 2002) (“Powell Remarks”).

⁶ In the 71 GHz Proceeding, Loea and many others have stated that the UMW spectrum must be licensed. WT Docket No. 02-146, Loea Comments at 16-18; Comments of the Wireless Communications Association International (WCA) at 13-14; EDS comments at 1; Fixed Wireless Communications Coalition (FWCC) Comments at 7-8; Harris Corporation Comments at 8, Terabeam Comments at 4, 9-10; Boeing Comments at 5-6; Sprint Comments at 6; Cisco Comments at 2-18; Comsearch Comments at 2-4. In addition, Motorola cautioned in its initial comments in this docket that “[a]s congestion rises, some uses of unlicensed spectrum will be at a distinct disadvantage under current rules.” Docket WT 02-146, Comments of Motorola at 15 (July 8, 2002).

⁷ See Cisco WT 02-146 Comments at iii, 20-21.

⁸ Loea WT 02-146 Comments at 17-18.

enabled by UMW in essence provides the end user with “virtual fiber,” and accordingly, users will expect to enjoy a level of confidence that they would have with actual fiber.

Loea therefore renews its request that the Commission, through the Task Force, consider a licensing regime for the 71-76 GHz and 81-86 GHz bands that maximizes their usage and provides the greatest benefit to the public.⁹ Specifically, the Commission should establish a system whereby all qualified entities will receive a “blanket” nationwide license, for which any deployed path must be coordinated with and receive authorization from a neutral third-party coordinator. Although this framework may not necessarily conform to the licensing models proposed in the Report, this proposal, which dozens of industry participants have advocated in the 71 GHz Proceeding, will achieve two goals that previously seemed incongruous: virtually limitless use of spectrum and minimum risk of interference.

B. Not All Spectrum Requires Mutual Exclusivity And Competitive Bidding

As submitted in its recent comments,¹⁰ Loea believes that certain aspects of the Task Force’s proposed exclusive use model are appropriate for the UMW spectrum. That is, insofar as exclusive licenses include “clearly defined and effectively enforced” rights for licensees to use a path,¹¹ this licensing framework comports with the three policy goals outlined in Section II.A above. The Report’s exclusive license model, however, carries with it notions of mutual

⁹ One of the Chairman Powell’s four tenets of spectrum policy reform is maximizing consumer choice, principally by speeding innovative services to market, while remaining mindful of public safety and defense requirements. *See* Powell Remarks (“Such a policy must embody what we have seen benefit the public in every other area of consumer goods and services – choice through competition, and limited, but necessary, government intervention into the marketplace to protect such interests as access to people with disabilities, public health, safety and welfare.”).

¹⁰ Loea WT 02-146 Comments at 8-9.

¹¹ Report at 38.

exclusivity that have no relevance for UMW spectrum and would have a severely negative impact on its development.

Loea is concerned that the exclusive use model seems to presuppose the appearance of mutual exclusivity and the need for auctions. The Report states that “where spectrum is subject to competing demands, and therefore more likely to have a high market value, this approach creates the strongest incentives for parties to put spectrum to its highest valued use.”¹² This language is characteristic of an auction construct, whereby the Commission must follow Congress’s mandate to reap the maximum value for scarce spectrum.¹³

Yet as the UMW spectrum itself proves, not all spectrum incurs co-channel interference or is subject to scarcity. The 71 GHz and 81 GHz bands — propagated over pencil beams only 0.36 degrees wide — are vulnerable to interference only where two transmission paths are “virtually on top of each other.”¹⁴ This lack of interference precludes a finding that this spectrum could ever be scarce. As Terabeam has stated in the 71 GHz Proceeding, “this [exclusive use] model fails ... as applied to the millimeter wave band, where there simply are not competing demands for spectrum.”¹⁵ Thus, while conveying licenses for such spectrum, with all attendant rights, is necessary for the viability of new services, wide area geographic exclusive licensing as set forth in the Report is not. Loea therefore urges the Bureau to establish a policy that discerns between the notions of exclusive use licensing and the need for exclusivity in path licensing.

¹² Report at 38.

¹³ See *Implementation of Section 309(j) of the Communications Act — Competitive Bidding*, PP Docket No. 93-253, Second Report and Order, 9 FCC 2348, 2349 (1994) (discussing the objective of “[a]warding licenses to those who value them most highly” in accordance with Congress’s mandates).

¹⁴ Loea WT 02-146 Comments at 17. See also WT 02-146, Comments of Endwave at 3-4; Boeing Comments at 4.

¹⁵ Terabeam WT 02-146 Comments at 8.

C. The Commons Approach For High-Frequency Spectrum Provides Flexibility But May Not Ensure The Most Robust Development Of Services

The Report's alternative to exclusive use licensing is the commons model. The commons model adopts the Commission's existing unlicensed use option coupled with "user protocols and etiquette" to govern technical issues and avoid interference.¹⁶ The Task Force has concluded that this model "should be applied to significant portions of the spectrum."¹⁷ Loea cautions the Bureau to note that permission for unlicensed use has historically been granted sparingly, and for good reason, as there are sound concerns about service degradation and congestion.¹⁸ As noted earlier, Loea has learned, through its limited experience with deployment, that potential users are very concerned that they risk significant financial exposure, in some ways proportional to the amount of traffic that a communication link may carry, if there is some remote probability of interference. One clear example is a deployment for the Super Bowl: an interruption of an HDTV communications link would bring financial exposure on the order of hundreds of millions of dollars if the transmission were depending only on the UMW link.

The Task Force itself notes that unlicensed use is approved for commercial services only in the 2.4 GHz band, which is characterized by "low-power short-distance communications."¹⁹ This qualification is important, because the coupling of both of these characteristics — that they are short-range and emit low power — ensures minimal interference and little need for co-channel coordination. Where, however, transmissions require additional power, the risk of interference increases significantly. In addition, where transmissions are long-range, for example, Loea's pencil-beam transmissions of 10 miles or more, the number of users deployed

¹⁶ Report at 39.

¹⁷ *Id.*

¹⁸ See Motorola WT 02-135 Comments at 15. Unlicensed use for commercial services is presently approved only for the 2.4 GHz band. Report at 40.

¹⁹ Report at 40.

along that transmission path increase. Although UMW spectrum is generally not susceptible to harmful interference, Loea has explained that a concurrence of transmissions will degrade service.²⁰ Permitting unlimited unlicensed use of the UMW spectrum will result in substantially degraded service and an inability for providers to offer the service levels and transmission integrity that customer will require if they are to use UMW services.

Loea therefore suggests that for the UMW spectrum the Commission consider the approach that a great majority of the industry has advocated in the 71 GHz Proceeding: grant of nationwide licenses for the UMW spectrum, conditioned upon coordination of paths through a neutral third party.²¹ In practical application, the process works as follows: the Commission will grant initial authorization to an entity that meets some minimum qualifications to provide service. This authorization is a “blanket” nationwide license to use the full 71 GHz or 81 GHz band, or both.

With this license, the entity can apply to a knowledgeable third party,²² funded through separate application fees, for permission to build out specific transmission site paths. The entity must provide relevant technical data and the proposed coordinates of its transmitting equipment. This information will be evaluated by and stored in a database managed by the coordinator. If authorized, the applicant will have the exclusive right to transmit along that path and will have superior rights to newer entrants for the purpose of resolving interference.

²⁰ “[E]ven though the entire bandwidth would be utilized, the pencil beam nature of the spectrum means that for harmful interference to occur, two non-cooperative transmission paths would have to be virtually coincident and pointing in nearly the same direction.” Loea WT 02-146 Comments at 14.

²¹ Docket WT 02-126, Boeing Comments at 5-6; FWCC at 10; Sprint at 6; Cisco at 18; Comsearch at 3-4; WCA Comments at 14-19.

²² Cisco suggests several qualifications that a coordinator must meet in its 71 GHz comments. Cisco WT 02-146 Comment at 25.

This proposed regime represents a hybrid of the exclusive use and commons models, whereby users have the “clearly defined rights” that the orderly administration of spectrum requires, yet usage is not limited to a certain number of users or type of service. It precisely tailors the concept of exclusive licenses to the level of individual pencil beams rather than by entire geographic region. This approach is possible for two reasons: the unique, virtually interference-proof propagation characteristics of the UMW spectrum; and the oversight of a third party that will protect each path from interference. It is a concept that costs the Commission very little yet provides it with the authority to regulate this spectrum in the public interest. Loea urges the Commission to add this blanket licensing regime to the menu of licensing options that the Task Force has proposed.

CONCLUSION

For these reasons, Loea urges the Commission to consider the unique characteristics of the 71-76 GHz and 81-86 GHz bands when evaluating the licensing proposals submitted by the Task Force. Specifically, it should establish a licensing framework for these bands that embraces the stability of the exclusive use model while enabling unlimited market entry as envisioned under the commons model. This hybrid approach will ensure the rapid development and provision of services over the UMW spectrum while maintaining meaningful Commission oversight over its use.

Respectfully submitted,

LOEA COMMUNICATIONS CORPORATION

By:

Paul Madison / saj

Paul G. Madison
Stephanie A. Joyce
KELLEY DRYE & WARREN LLP
1200 19th Street, N.W., Suite 500
Washington, D.C. 20036
202.955.9600
202.955.9792 fax

Attorneys for Loea Communications Corporation


Thomas Cohen
The KDW Group
1200 19th Street, N.W., Suite 500
Washington, D.C. 20036

Lou Slaughter
Loea Communications Corporation
3038 Aukele Street
Lihue, HI 96766

Dated: January 9, 2003

CERTIFICATE OF SERVICE

I, Stephanie A. Joyce, certify that on this 9th day of January, 2003, a true and correct copy of the foregoing Reply Comments of Loea Communications Corporation, Inc. were served First Class Mail* or electronic mail on the following persons:


Stephanie A. Joyce

The Honorable Michael Powell
Chairman
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Brian Tramont
Office of the Chairman
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Peter Tenhula
Spectrum Policy Task Force
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

The Honorable Kathleen Abernathy
Commissioner
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Jennifer Manner
Office of Commissioner Abernathy
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

The Honorable Michael Copps
Commissioner
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Paul Margie
Office of Commissioner Copps
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

The Honorable Kevin Martin
Commissioner
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Samuel Feder
Office of Commissioner Martin
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Thomas Sugrue
Chief, Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Barry Ohlson
Office of Commissioner Adelstein
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

The Honorable Jonathan Adelstein
Commissioner
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Thleen Ham, Deputy Chief
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Brian O'Donnell
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Ed Thomas
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Thomas J. Sugrue, Chief
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Shellie Blakeney
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Julius P. Knapp
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Michael Marcus
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, S.W.
Washington, D.C. 20554

Mitchell Lazarus, Esq. *
Fletcher, Heald & Hildreth, PLC
1300 North 17th Street, 11th Floor
Arlington, VA 22209

Ronald D. Coles *
DMC Stratex Networks, Inc.
3103 Surber Ct.
Fredericksburg, VA 22408

Andrew Kreig *
President
Wireless Communications Association
International
1140 Connecticut Ave., N.W.
Suite 810
Washington, D.C. 20036

David A. Nall *
Mark D. Johnson
Squire, Sanders & Dempsey, LLP
1201 Pennsylvania Ave., N.W.
P.O. Box 407
Washington, D.C. 20044-0407

Alan S. Tilles, Esq. *
Jason Kerben, Esq.
Shulman, Rogers, Gandal, Pordy
& Ecker, P.A.
11921 Rockville Pike, Third Floor
Rockville, MD 20852

Wayne Pleasant *
Telaxis Communications
20 Industrial Drive East
P.O. Box 109
South Deerfield, MA 01373-0089

Robert Volker *
Pacific LightNet
737 Bishop Street
Suite 1900
Honolulu, HI 96791

A.J. Beasley *
CARMA Project Manager
Owens Valley Radio Observatory
P.O. Box 968
100 Leighton Lane
Big Pine, CA 93513

Christopher R. Hardy *
Vice President
COMSEARCH
19700 Janelia Farm Boulevard
Ashburn, VA 20147

Richard D. Burkhart *
Chief Executive Officer
BGI, Inc. (i-Fi, LLC)
980 N. Michigan Avenue (1775)
Chicago, IL 60611

Jay C. Keithley *
Rikke K. Davis
SPRINT Corporation
401 9th Street, N.W.
Washington, D.C. 20004

Brian Dewhurst *
The National Academies
Board on Physics and Astronomy
500 Fifth Street, N.W.
Washington, D.C. 20001

Scott Blake Harris *
Mark A. Grannis
Harris, Wiltshire & Grannis LLP
1200 Eighteenth Street, N.W.
Suite 1200
Washington, D.C. 20036

Doug Doherty, Manager *
North American Regulatory Affairs
Harris Corporation
Microwave Communications Division
350 Twin Dolphin Drive
Redwood Shores, CA 94065

Fred K. Y. Lo *
Director
National Radio Astronomy Observatory
520 Edgemont Road
Charlottesville, VA 22903-2475

Howard J. Symons *
Russell H. Fox
Susan S. Ferrel
Mintz, Levin, Cohn, Ferris
Glovsky and Popeo, P.C.
701 Pennsylvania Avenue, N.W.
Washington D.C. 20004-2608

Sarosh Vesuna
Chair of the Technical Committee
WI-FI ALLIANCE
2570 West El Camino Real
Suite 304
Mountain View, CA 94040-1313